# Pacific Northwest Suppliers: Working To Meet South Korea's Rising Demands for Milling-Quality Wheat

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South Korea is a vibrant market for milling-quality wheat. According to the Korea Flour Mills Industrial Association (KOFMIA), it is used mostly to make noodles (48 percent of total wheat flour use), bread (13 percent), confectionery products (9 percent) and homemade wheat-based products (8 percent).

In calendar year 2001, South Korea imported 2.4 million metric tons of milling-quality wheat, of which 1.3 million tons or 54.5 percent, valued at about $178 million, came from the United States. Australia shipped about 1 million tons; Canada accounted for the rest.

U.S. hard red winter wheat is used for noodles, wheat-based products prepared in restaurants and homes, soy sauce and other industrial uses; hard red spring and dark northern spring varieties for bread; and soft white wheat for confectionery products.

Hard wheat contains more protein—and therefore more gluten strength, which is better for bread making because it offers more bite resistance. Soft wheat has less gluten and more starch and therefore a more sticky texture, which is appropriate for confectionery products and Asian noodles (when blended with hard wheat).

## Sizing Up the Competition

The United States competes mainly with Australia and, to a lesser extent, with Canada in South Korea's milling-quality wheat market. The United States primarily hopes to wrest market share from Australia by producing the right type of wheat for noodles. South Korea sourced all of its wheat from the United States until 1985—when Australia began aggressively promoting its noodle wheat, which fully meets South Korean noodle manufacturers' specifications at a favorable price.

South Korean millers want to be able to extract consistently high levels of flour. Noodle manufacturers want a protein level of about 10.5 percent, good starch characteristics to promote quick cooking, good texture, low ash content (so there's no bitter taste), good color (creamy yellow), color stability (little or no brown discoloration) and brightness.

To make noodle flour from U.S. wheat, hard red winter and soft white varieties are blended to get the desired protein level of 10.5 percent. Hard red winter wheat usually has a protein level of 11-13 percent; soft white of 9-10 percent; and hard red spring typically 14 percent. However, the color of the blended U.S. product is not quite what Koreans want.

By contrast, Koreans don't need to blend Australian wheat, which arrives already segregated and blended to ensure the 10.5 percent protein level.

For making bread and rolls, some bakers and millers prefer Canadian Western red spring wheat, with its gluten characteristics, to U.S. hard red spring or hard red winter varieties.

## Meeting the Marketing Challenge

The United States is working on several fronts to satisfy customers in South Korea. In the research arena, breeders are developing wheat to compete with Australia and regain market share, including the noodle market.

In the Pacific Northwest, club, a subclass of soft white, optimal for cake making and with high flour extraction, is often mixed with common soft white wheat to create a blend called Western white. There is also potential to market 100-percent club rather than sell it as a blend, since it has

higher flour extraction, low gluten strength and, for some uses, may be an improvement over the Western white blend. Some straight club shipments have already occurred.

The industry is working on waxy wheat, which consists mostly of a soft wheat that has a starch make-up of 100-percent amylopectin, which speeds up noodle cooking times. (Currently, expensive modified potato starch is normally used to cut the cooking time for cup noodle items.)

Pacific Northwest wheat breeders are also developing the hard white wheat class. Washington State breeders have developed a variety named Macon, which can be used to make bread as well as noodles. The Pacific Northwest wheat industry expects to be able to produce hard white varieties that can meet particular protein level needs, including the protein specification of 10.5 percent for noodles, although so far several factors have constrained production.

Farmers have been reluctant to grow such wheat unless they are assured of a profitable, reliable market. On the other hand, prices must be affordable enough to entice South Koreans to try a different wheat class. Elevators and exporters, meanwhile, want to avoid offering premiums, while millers need to know that U.S. hard white wheat varieties will meet their needs and consumer preferences.

For crop years 2003-05, the Farm Security and Rural Investment Act provides $20 million in incentives to encourage U.S. production of hard white wheat meeting certain quality specifications; details of the provision are still being worked out. The Export Credit Guarantee Program (GSM-102) for fiscal 2003 has allocated $180 million in guarantees to encourage wheat exports to Korean buyers who need credit but may not be able to obtain financing without credit guarantees.

The U.S. Wheat Associates, a participant in USDA's Market Access Program, has also undertaken activities to promote U.S. wheat sales, including:

- financing travel of South Korean trade teams to the United States
- collaborating with the Wheat Market-

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**Taking Stock of South Korea's Top Three Suppliers of Milling Wheat Imports**

| | | Calendar 2000 | | Calendar 2001 | |
|---|---|---|---|---|---|
| **Country** | **Variety** | **Metric tons** | **Market share (%)** | **Metric tons** | **Market share (%)** |
| **United States** | Western white/ Soft wheat | 611,400 | 24.4 | 658,000 | 27.3 |
| | Hard red winter | 327,100 | 13.1 | 312,800 | 13.0 |
| | Dark northern spring | 390,700 | 15.6 | 342,400 | 14.2 |
| Subtotal | | 1,329,200 | 53.1 | 1,313,200 | 54.5 |
| **Australia** | Australian soft | 117,900 | 4.7 | 22,900 | 0.9 |
| | Australian standard white | 814,100 | 32.5 | 825,600 | 34.3 |
| | Australian hard | 103,700 | 4.1 | 108,000 | 4.5 |
| Subtotal | | 1,035,700 | 41.3 | 956,500 | 39.7 |
| **Canada** | Canadian Western red spring | 140,200 | 5.6 | 140,400 | 5.8 |
| **Grand total** | | 2,505,100 | 100 | 2,410,100 | 100 |

Source: Korea Flour Mills Industrial Association.

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ing Center, a public/private, nonprofit corporation in Portland, OR, that conducts training and research on making Asian bread and noodles using U.S. wheat

- supporting travel of U.S. technical experts to South Korea
- emphasizing the importance of writing contract specifications that help South Korean processors source the types of wheat they need

In addition to these efforts, U.S. plant breeders and milling experts need to spend time in South Korea to fully understand the market and its technical requirements, and to relay this information back to the farmer and exporter.

## Growing Concerns

In July 2002, import directors from the Daehan, Cheiljedang, Dongah and Shinhan flour mills (representing about 76 percent of South Korea's total milling capacity) traveled through the states of Montana, Washington and Oregon. They emphasized that South Korea would not permit importation of wheat derived from biotechnology and expressed concerns about weed seeds in grain shipments.

The import directors encouraged the wheat industry to continue its collaboration, communication and technical exchanges with the Korean flour milling industry.

## From U.S. Farmer to Korean Retailer

Wheat produced in the Pacific Northwest is generally shipped to the Columbia River export terminal, where it is examined by a federal or state grain inspector to ensure that it meets contract specifications for quantity and quality—i.e., weight, grade, moisture, dockage (waste content), and optional factors such as protein, aflatoxin and vomitoxin levels and falling number (an indicator of wheat soundness—the higher the score, the better the wheat for bread making). U.S. wheat is usually transported to South Korea on handymax vessels (with a capacity of 20,000-40,000 tons), but Korean ports can also handle panamax-size vessels (50,000-70,000 tons).

South Korea's eight private mills may issue requests for bids to purchase roughly three months before wheat is needed. The mill then selects one of the 15 trading companies registered to KOFMIA to contract for the wheat, generally on the basis of the lowest price that meets contract specifications. ■

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